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STATEMENT OF
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ADMINISTRATOR
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
BEFORE THE
SUBCOMMITTEE ON COMMUNICATIONS
OF THE
SENATE COMMITTEE ON COMMERCE
August 23, 1961

Mr. Chairman and Members of the Committee:

It is a pleasure for me to appear before this Committee this morning and to talk to you about some of the work the National Aeronautics and Space Administration is doing in the field of communication satellites.

As you gentlemen know, the President has issued a statement of policy covering the development and utilization of communication satellites. In that statement the President emphasized the fact that at the present time communication satellite technology is in a research and development status. More specifically, the President stated that the United States Government, in addition to its regulatory responsibilities

will "conduct and encourage research and development to advance the state of the art and give maximum assurance of rapid and continuous scientific and technological progress."

NASA's activities are primarily directed toward the scientific and technological development of communication satellites in order that they may be put to practical use for the benefit of people throughout the world at the earliest possible time. Extensive experimental and flight testing will be necessary before an operational communication satellite system may be established. It is NASA's task to provide leadership and direction for that work.

Let me review very briefly the projects that have been instituted since the first of the year and indicate the manner in which the total national program covers the broad front of the new technology of communication satellites.

You will recall that just a little over a year ago, on August 12 to be exact, the Echo I balloon was successfully launched and served dramatically to focus attention upon the possibility of utilizing satellites for communication relay purposes. Echo I was a so-called "passive" satellite. The passive type of satellite is one which contains no receiver or transmitter for communication relay purposes. It provides,

instead, a reflective surface from which radio transmissions may be reflected over great distances. We have a follow-on project, Echo II, to improve and continue testing spherical reflectors. Under NASA contract, the G. T. Schjeldahl Corporation will design a balloon that will be larger and more rigid, in order to experiment with the requirements for durability in the space environment, which is essential for economy in communications.

In the field of active satellites, NASA has instituted three major undertakings. A so-called "active" satellite is one which contains electronic equipment to receive and retransmit radio signals. This type of satellite appears at the present time to be of primary interest to communications organizations, in this country and abroad, which face the necessity of expanding and improving their facilities to meet the growing demands for communications.

First, there is Project Relay, in which Radio Corporation of America is the prime contractor, for the design and construction of a communication satellite to be launched next year. The Relay satellites will be launched in low orbits and will be able to demonstrate intercontinental television. In addition to having an experimental capability to receive and

retransmit telegraph, telephone and television signals, it will contain other equipment for experiments which will give vital information with regard to the effect of the space environment upon critical components.

The second project is a cooperative agreement with the American Telephone and Telegraph Company. This project involves two or more satellites to be built by that company at its own expense and launched by NASA with the launching and tracking costs reimbursed. The National Aeronautics and Space Administration has entered into this arrangement with AT&T in order to broaden the experimentation deemed desirable in anticipation of the development and utilization of an early operational satellite system.

Third, we are currently negotiating a contract with the Hughes Aircraft Corporation, taking advantage of a substantial amount of research and development work previously performed by that company at its own expense, to acquire a very light weight satellite which will be flown at the so-called 24-hour synchronous altitude. If a satellite can be placed into an equitorial orbit at the height of 22,300 miles with the right velocity, it will appear to remain stationary or relatively stationary over a fixed point on the earth. The requirement

for position keeping is important to the ultimate development of communication satellites and early communications experimentation at that high altitude should be undertaken with a minimum of delay. There is both a governmental and a commercial interest in this project. Accordingly, it has been initiated jointly with the Department of Defense. The Army Advent Management Agency will provide the necessary ground stations and will conduct the communications experiments. NASA will develop the satellite and provide for launchings.

The foregoing projects, taken together with other research activities, will provide the experimental data necessary for technical decision-making at the earliest practicable date. Our national objective, as the President stated, is to obtain an operational system providing commercial grade communications for world-wide use as soon as possible.

NASA is engaged in many other activities relating to the field of satellite communications. For example, we participate in the work of the International Radio Consultative Committee which was established as a branch of the International Telecommunications Union for the purpose of studying and making recommendations on technical radio questions and operating procedures. NASA has also participated, with other agencies

of our Government, in the formulation of a United States position with respect to the international allocation of radio frequencies. In this connection, the work of the Interdepartmental Radio Advisory Committee, on which NASA is represented, has resulted in a major step toward a United States position which will provide a sound contribution to international agreement in this important area. Our efforts have been directed not only toward the far-sighted allocation of frequency bands for use by commercial and governmental agencies all over the world to provide a variety of communications services using satellite relays, but also toward obtaining the necessary international agreements in support of the use of certain radio frequencies for space science and manned exploration purposes.

As the members of this Committee are probably aware, an international conference will be held under the auspices of the International Telecommunications Union, probably in the fall of 1963, to consider the allocation of radio frequencies for both research and operational phases of space communications. The ITU is a specialized agency of the United Nations organization and, as such, in our view will play a most constructive role in achieving international agreements to support the use of a universal but limited resource of nature

-- namely, the radio frequency spectrum.

Earlier this year NASA completed the technical negotiations whereby the communications organizations in England and France will provide ground stations for experimental purposes in connection with Project Relay and other projects in the future. Technical arrangements with other countries are being concluded. It is significant, I think, that from the very beginning the United States has dealt with foreign countries interested in communications satellites on a cooperative basis. We have sought to make arrangements which provide interested countries the greatest possible opportunity for participation in experimentation. This should pave the way for further cooperative agreements that will be necessary, particularly when operational systems become technically and economically feasible.

In many of the activities outlined above, NASA has acted in close coordination with the Federal Communications Commission. We in NASA fully recognize the important responsibilities of the Commission in relation to the establishment of an operational communications satellite system at the earliest practicable date. We have had the closest and most cooperative

relationship with the Commission at all levels, and I know that this will continue to be the case. Our business is primarily the advancement of space technology, and we shall stand ready at all times to provide the Commission with any advice and assistance on this aspect of satellite communications which it desires.

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